

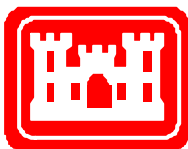


**ASBESTOS RESURVEY/SAMPLING, BENJAMIN FRANKLIN VILLAGE,
293RD BSB MANNHEIM**

**ASBESTOS MANAGEMENT PLAN
FINAL**

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Prepared for:



**U.S. Army Corps of Engineers
Europe District
Konrad-Adenauer-Ring 39
D-65187 Wiesbaden**

Prepared by:



**OGDEN Umwelt und
Energiesysteme GmbH
Eschborner Landstrasse 42-50
D-60489 Frankfurt/Main**

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LIST OF ACRONYMS

ACM	Asbestos-Containing Material
AHERA	Asbestos Hazard Emergency Response Act
AMCO	Asbestos Management Control Officer
AMP	Asbestos Management Plan
AMT	Asbestos Management Team
APM	Asbestos Program Manager
AK	Artillery Kaserne
AR	Army Regulation
ASHARA	Asbestos School Hazard Abatement and Reauthorization Act
BFV	Benjamin Franklin Village
BGI	Berufsgenossenschaftliche Information (Information of occupational society)
BIA	Berufsgenossenschaftliches Institut für Arbeitsschutz (institute for occupational safety and health)
CENAU	U.S. Army Corps of Engineers, Europe District
DAP	Deutsches Akkreditierungssystem Prüfwesen GmbH
DAR	Deutscher Akkreditierungsrat
DO	Delivery Order
DPW	Department of Public Work
DRMO	Defense Reutilization and Marketing Office
EDXA	Energy Dispersive X-ray Analysis
EPA	U.S. Environmental Protection Agency
FGS	Final Governing Standards
HASP	Health and Safety Plan
HEPA	High Efficiency Particulate Air
ILAC	International Laboratory Accreditation Cooperation
MISC	Miscellaneous Asbestos-Containing Material
O&M	Operation & Maintenance
OSHA	U.S. Occupational Safety and Health Administration
PACM	Presumed Asbestos-Containing Material
PLM	Polarized Light Microscopy
PM	Project Manager
POC	Person of Contact
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
SEM	Scanning Electron Microscopy
SM	Surfacing Material
TSI	Thermal System Insulation
USAREUR	U.S. Army Europe
VDI	Verein Deutscher Ingenieure
WP	Work Plan

1 INTRODUCTION

1.1 PURPOSE OF THE MANAGEMENT PLAN

This Asbestos Management Plan (AMP) has been prepared to establish standard operating procedures for handling asbestos-containing materials (ACM) within U.S. Army structures located at Benjamin Franklin Village (BFV) at the 293rd BSB Mannheim, Germany. The surveyed structures consist of family housing units and utility facilities. Ogden Umwelt und Energie Systeme GmbH (Ogden) has prepared this AMP for CENAU under Contract DACA90-01-D-0017, DO 09.

The AMP has been prepared in accordance with the Final Governing Standards for Germany (FGS), Host Nation occupational safety and health regulations for handling of hazardous substances, and the U.S. Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1, 9/3/96).

This AMP describes appropriate health and safety requirements designed to control known and suspect ACM that may be encountered during general facility operations and maintenance (O&M) procedures. The AMP should be updated and amended in order to consider changes in site conditions and work activities which may affect the safety and health of employees or building occupants.

The purpose of the management plan is to minimize building occupant and employee exposure to asbestos fibers. To meet these objectives, the asbestos management plan includes the following:

- Asbestos Management Program responsibilities
- A notification program to inform building occupants, employees, maintenance workers and contractors about the location of ACM and how to avoid disturbing ACM
- Periodic surveillance and re-inspection of ACM by trained inspectors to observe, assess, and document any changes of the ACM's condition
- Operation and maintenance (O & M) work practices to avoid or minimize fiber release during activities affecting ACM
- Recordkeeping to document all asbestos-related management and operational activities
- A work control / permit system to administer activities which might disturb ACM
- A worker protection and medical surveillance program which indicates personal protective equipment and medical protection programs
- Asbestos-containing waste collection and disposal requirements

- Training requirements for the Asbestos Program Manager, and maintenance staff

1.2 ASBESTOS SURVEY RESULTS

In February 2002, Ogden performed an asbestos survey of 98 buildings at the BFV located at the 293rd BSB Mannheim.

Based on the survey results, the following ACM and presumed ACM (PACM) were identified:

Thermal System Insulation (TSI):

- Furnace access insulation (millboard)
- Furnace lining

Surfacing Material (SM):

- No asbestos-containing surfacing materials were detected in the surveyed buildings.

Miscellaneous ACM (MISC):

- Floor tiles
- Mastic
- Flange gaskets
- Furnace door gaskets
- Fire doors
- Cement roofing material
- Asbestos cement panels
- Asbestos cement pipes

Suspected ACM that could not be sampled was characterized as PACM.

The identified ACM was assessed according to the German Asbestos-Guidelines. This assessment is performed with a scoring table (Assessment of the Urgency of Abatement of Asbestos Products), which provides seven assessment groups. The seven single scores are summed up and indicate the urgency of abatement. The scoring system was designed for the assessment of friable ACM inside of buildings.

A risk score above 79 (Urgency Level I) requires immediate response by abatement and/or evacuation of the respective area. A risk score between 70 and 79 (Urgency Level II) indicates a re-assessment every two years and a medium-term requirement for abatements. Scores below 70 (Urgency Level III) indicates a re-assessment every 5 years.

None of the identified ACM received an assessment score above 79 (Urgency Level I). Accordingly, no immediate abatement is necessary for any of the identified ACM.

Four (4) of the identified materials (mastic of floor tiles in buildings 657, 672, 673 and 687) received an assessment score between 70 and 79 (Urgency Level II). For these materials, a reassessment is required every 2 years. Ogden recommends a medium-term (2 to 3 years) abatement of these materials.

All other identified ACM received an assessment score below 70 (Urgency Level III) or were classified as tightly-bound ACM. These materials should be reassessed every 5 years.

The surveyed buildings, the identified ACM and PACM, the Urgency Levels, and recommendations are summarized in Appendix B. A detailed documentation of the asbestos survey is included in the Asbestos Survey Report, Ogden, July 2002.

2 ASBESTOS MANAGEMENT PROGRAM RESPONSIBILITIES

2.1 ASBESTOS PROGRAM MANAGER (APM)

The Asbestos Program Manager has the responsibility and authority for the implementation of the asbestos management program. For effective implementation, the APM will:

- Oversee all asbestos-related activities in the buildings, including inspections, O & M activities, and abatements;
- Ensure that the notification program is realized and all persons affected are properly informed;
- Ensure that maintenance personnel have received the necessary training;
- Ensure that abatement contractors are qualified to conduct the abatement;
- Monitor work performed in the buildings by other contractors;
- Periodically review the O & M plan to determine whether it should be updated.

The position of APM should be fulfilled by the facilities manager, building engineer or safety and health director. The APM has to be accredited as a Building Inspector / Management Planner by the completion of AHERA Building Inspector / Management Planner training and TRGS 519. If the selected person is not adequately prepared, he or she should receive the necessary training prior to beginning the management of the program.

2.2 ASBESTOS MANAGEMENT TEAM (AMT)

The APM should establish a BSB Asbestos Management Team to implement plans and policies. Members of the team should include personnel from the Public Affairs Office, Directorate of Public Works, Safety Office and other interested parties as necessary.

In selecting the AMT members, it is essential to choose personnel who, in the normal course of their work, will become aware of pending construction projects. Work orders must be submitted for all construction, including self-help projects. Such a policy will eliminate the unknowing or unintentional disturbance of ACM. In addition, one individual must be selected to review all work orders to determine whether there is a potential asbestos impact. It is important that members of the AMT work together to complete certain tasks. Apart from the preparation of specific projects (abatement, surveys), the AMT is responsible for asbestos related issues during normal base operations including the following:

- Identification of maintenance personnel or others that may become exposed to asbestos fibers during the course of their assigned duties.
- Assisting in procuring and providing the necessary personal protective equipment (PPE) and clothing for maintenance personnel who may be exposed to asbestos fibers.
- Establishing worker education, training and exposure notification programs for maintenance personnel, if necessary.
- Ensuring a medical surveillance program for maintenance personnel who may be exposed to asbestos fibers.

The AMT should meet quarterly and brief the Installation Commander on an as-needed basis. The AMT should include the following individual positions:

2.2.1 Asbestos Management Control Officer (AMCO)

The AMCO should be a knowledgeable person within the DPW, preferably from the Installation Management Branch. It is the responsibility of this individual to review all construction-related work orders to determine whether there is a potential asbestos impact (see Work Control / Permit System). This determination is based on either a search through the existing installation asbestos survey report / database or a direct inspection of the buildings or areas to be impacted by the construction.

2.2.2 Environmental Coordinator

A coordinator from the Environmental Management Office is responsible for arranging and executing the installation asbestos resurveys and for updating the database. In addition, this individual is responsible for keeping copies of abatement contractors' permits and abatement notifications to the relevant authorities on file.

2.2.3 Health & Safety Manager

The Health & Safety (H & S) Manager is assigned to the AMT to implement the respiratory protection program (for U.S. citizens falling under Occupational Safety & Health Administration (OSHA) regulations). The H & S Manager furthermore reviews all work orders having a potential asbestos impact, abatement specifications and contractor's work plans, and occupational health and safety-related issues. This person will also be responsible for reviewing and filing collected post-abatement clearance data and to inspect engineering controls during abatement, unless this is contracted out or performed by the contracting officer's representative. Since asbestos abatement work at 293rd BSB properties is generally performed by contracted companies, it may be advisable to combine the function of the H&S Manager with that of the Environmental Coordinator. In case asbestos work is performed by in-house personnel, an H&S Manager should be assigned to the AMT by the Safety Office.

2.2.4 Public Information Manager

An individual assigned to the AMT by the Public Affairs Office is responsible for informing Army and civilian personnel about upcoming asbestos abatement and survey projects (see Notification Program). This activity receives input from the other members of the AMT and notification of affected personnel must be provided well in advance of the commencement of the respective project. Furthermore, this individual is responsible for notifying building occupants of the presence of ACM (see Notification Program).

2.2.5 Other Team Members

On an as-required basis, the AMT needs to be extended by individuals from other offices including:

Housing Office: For asbestos projects in Family Housing Areas, coordination of time schedules and access to apartments is critical. The Notification Program should therefore be implemented by or in cooperation with the housing office.

3 NOTIFICATION PROGRAM

3.1 NOTIFICATION OF BUILDING OCCUPANTS / EMPLOYEES

All building occupants and employees should be informed about the location and condition of ACM that they might disturb, the potential related hazards, and respective instructions to avoid ACM deterioration.

The notification program should include:

- A notification letter (see Appendix C) to all building occupants that may come into contact with ACM;

- Labels or signs posted on central locations of ACM where concerned occupants can see them; and
- Awareness or information sessions, if necessary.

The notification letter should be sent out at least annually. The notification should be posted in a prominent location in the building. The information provided to the building occupants and employees should contain the following facts:

- The location and condition of ACM.
- Asbestos only presents a health hazard when fibers become airborne and are inhaled; the mere presence of ACM does not represent a health hazard.
- ACM should not be disturbed.
- Any evidence of disturbance or damage of ACM should be reported to the APM.

3.2 NOTIFICATION OF MAINTENANCE PERSONNEL OR CONTRACTORS

Maintenance personnel and contractors should be informed of the location and condition of ACM that they might disturb during their work.

Therefore, the AMCO should check the ACM inventory of a building before any work is to be conducted. The AMCO will review records, building plans and all other present asbestos related information. The AMCO will then inform the maintenance personnel or contractors, via a Work Authorization Form, of all relevant preventative measures which have to be taken (see Section 7 and Appendix D).

According to OSHA requirements, a notification about asbestos dangers in the workplace will be provided to all US-employees or US-contractors performing any work that might disturb ACM (see Appendix G).

4 SURVEILLANCE AND RE-INSPECTION

A re-inspection of present ACM which is classified as Urgency Level II has to be performed every 2 years (next inspection should be in 2004) by certified inspectors. For ACM, classified as Urgency Level III, a re-inspection shall be conducted every 5 years (next inspection should be in 2007) by certified inspectors.

5 OPERATION AND MAINTENANCE PROCEDURES

Special O & M procedures are required to avoid fiber release during activities in areas where ACM is present. Maintenance activities can be divided into three categories with regard to their potential for disturbing ACM:

- (1) Maintenance activities that are unlikely to involve any direct disturbance of ACM: for example routine cleaning of surfaces (providing ACM debris is not present).
- (2) Maintenance activities which may cause accidental disturbance of ACM: for example, maintenance work above a suspended ceiling in an area that may have surfacing ACM or TSI overhead.
- (3) Maintenance activities which involve disturbance of ACM: for example, removing a small segment of asbestos-containing pipe insulation to repair a pipe leak.

The O & M procedures for the ACM present in the buildings of BFV are described in Appendix E. According to German regulations, maintenance or removal work on ACM may only be performed by trained personnel according to TRGS 519. In addition, maintenance and removal work on weakly-bound (friable) ACM has to be performed by abatement companies that are approved by German authorities according to § 39, Regulation for Hazardous Substances (Gefahrstoffverordnung). Generally, mechanical impact on ACM like abrading, sawing, drilling, or milling is not allowed according to §§ 15 and 22 of Regulation for Hazardous Substances.

Accordingly, any asbestos abatement or any maintenance work that requires asbestos removal and all activities belonging to the above explained category (3) have to be performed by professional contractors according to TRGS 519. Prior to all abatement or maintenance work at ACM, a Work Plan has to be approved by German authorities and the APM. This work plan should include the following information:

- Type and duration of the abatement / maintenance work.
- Location of the abatement / maintenance work.
- Abatement / maintenance procedures and protection methods.
- PPE.
- H&S measures and measures for decontamination of persons involved in the working area.
- Verification of the planned waste disposal.

6 RECORDKEEPING

The documentation of all asbestos related reports and records is essential for an effective implementation of the asbestos management plan. The APM will establish permanent files that include the following documents and records:

- Survey and re-survey results;
- Asbestos management plan;
- Asbestos waste storage and disposal records;
- Work permit / authorization records;
- O & M activity records;
- Abatement activity records;
- Inspection schedules;
- Notification of building occupants on ACM present in buildings;
- Notification of building occupants on planned abatements and surveys;
- Abatement notifications to local health authorities;
- Certificates of abatement and air monitoring contractors;
- Air monitoring results;
- Asbestos disposal records;
- Applicable regulations;
- Roster of trained personnel; and
- Asbestos training certificates.

The asbestos management plan including the O & M work procedures should be available to all building occupants and employees.

In addition, OSHA requires that employers retain the following records and medical surveillance to each employee performing asbestos-work:

- Personal air sampling records;
- Medical records for each employee subject to the medical surveillance program for the duration of their employment plus 30 years; and
- Record of exposure.

7 WORK CONTROL / PERMIT SYSTEM

A “work control / permit system” should be established to administer all work that could disturb ACM. This system requires the person requesting the work to submit a Job Request Form (see Appendix D) to the AMCO prior to any maintenance work. The form gives the time, location, and type of the requested work and identifies the personnel or contractor who will perform the work.

Upon receiving a Job Request Form, the AMCO will review whether ACM is present in the area where work will occur. If ACM is present but is not affected by the planned work, the AMCO will note the presence of ACM and additional instructions (O & M procedures) on a Work Authorization Form (see Appendix D) which is sent to the in-house maintenance supervisor or to the contract office. If ACM may be affected by the planned work, the AMCO or a qualified designated supervisor will visit the site and determine whether the work has to be performed by a professional contractor according to TRGS 519.

The Work Authorization Form should include the following information:

- The location and condition of ACM.
- The instruction that ACM should not be disturbed.
- O & M procedures to avoid or minimize fiber release.
- The type of necessary PPE and where the PPE and clothing is available for maintenance personnel.
- Instructions that any evidence of disturbance or damage of ACM has to be reported to the APM.

The Job Request Form and the Work Authorization Form should be placed in the permanent files (see Section 6).

8 WORKERS PROTECTION / MEDICAL SURVEILLANCE

8.1 WORKERS PROTECTION

Specific worker protection is required for the following asbestos-related measures:

- Bulk sampling;
- O & M procedures disturbing ACM; and
- Asbestos abatements;

For BSB personnel, workers protection will only be necessary for O & M procedures posing no danger of fiber release and bulk sampling.

Any maintenance work on ACM with a danger of fiber release and asbestos abatements have to be performed by a professional contractor according to TRGS 519. Asbestos contractors are required to follow the worker protection program according to TRGS 519. Prior to all abatement or maintenance work, the contractors have to provide the worker protection program as part of a Work Plan and Health and Safety Plan to German authorities and the APM.

The following PPE is required for BSB personnel during all sampling activities, and O & M procedures disturbing ACM:

- Disposable nitrile / vinyl gloves, if necessary;
- Disposable overall, if necessary; and
- Half-face respirator fitted with P-100 /P2 or P3-filters.

Respirator cartridges/filters utilized by BSB personnel are required to be approved for dust and fibers. Respirator cartridges / filters must be changed at least daily or when breathing difficulty is encountered due to particulate loading or as per manufacturer instructions. All personnel wearing respirators must pass a respirator fit-test prior to starting work. A respiratory protection plan is included in Appendix F.

The disposable personal protective equipment shall be disposed of after each use. Disposal of personal protective equipment shall be handled as ACM (see Section 9).

8.2 MEDICAL SURVEILLANCE

Medical surveillance records are applicable to all personnel who might be exposed to asbestos fibers by:

- Taking bulk or air samples; or
- Monitoring asbestos abatements within the work area; or
- Performing O & M procedures disturbing ACM.

Prior to any asbestos-related work, BSB personnel who might be exposed to asbestos fibers must have a medical examination. All personnel should be currently participating in a Medical Surveillance Program which:

- Provides a baseline record of significant medical parameters;
- Provides a continuing surveillance to measure the effectiveness of health and safety controls;
- Assesses work restrictions for specific stress situations such as respirator use or wearing of protective clothing; and
- Satisfies regulatory requirements which mandate periodic medical evaluations.

The health assessment should be performed by an occupational health professional (i.e., Berufsgenossenschaftliche Arbeitsmedizinische Dienste).

Since asbestos abatements and maintenance work disturbing ACM have to be performed by asbestos contractors, the required training/certification and medical surveillance records have to be provided in a work plan.

9 WASTE DISPOSAL

Asbestos-containing materials like disposable personal protective equipment used for work affecting ACM or disposable cloths used for wet-wiping in areas where asbestos fibers could be present shall be disposed of at the workplace in double packed and tightly sealed disposal bags having the following label or equivalent:

DANGER CONTAINS ASBESTOS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

ACHTUNG ENTHÄLT ASBEST
GESUNDHEITSGEFÄHRDUNG BEI EINATMEN VON ASBESTFEINSTAUB
SICHERHEITSVORSCHRIFTEN BEACHTEN

Asbestos waste has to be collected in leak tight containers, big-bags or poly drums, etc. that are labelled as described. The collected waste shall not be repacked. Asbestos-containing waste must never be stored together with solid waste (household-type waste). Instead, it should be collected at designated hazardous waste collection points or hazardous waste storage areas. The collected waste has to be picked up and transported to a waste site approved by the German authorities by a certified transporter. The disposal records have to be placed in the permanent files (see Section 6).

The above-said refers to asbestos-containing waste deriving from in-house maintenance and repair work. Asbestos waste resulting from contracted asbestos work is the responsibility of the contractor and shall not be collected, stored or disposed via base personnel or the Defense Reutilization and Marketing Office (DRMO) unless this is contractually agreed on.

10 TRAINING

The services of outside contractors should be used for all asbestos related work.

AR 420-70 and AR 200-1 require that AMT personnel directly involved in the management and control of ACM be trained at a level consistent with the US Environmental Protection Agency Asbestos Hazard Emergency Response Act (AHERA) and Asbestos School Hazard Abatement and Reauthorization Act (ASHARA) requirements. For the AMT to coordinate and execute the AMP, it is necessary that those team members actively involved in the planning and management aspects of the plan be trained as a Building Inspector and Management Planner. If work area monitoring, personal sampling, clearance sampling, visual inspection of abatement areas is performed by an AMT member (e.g. the Environmental or Health & Safety Manager) this individual needs to be trained at Supervisor level. Technical staff (e.g. electricians, plumbers) and custodial and maintenance staff must attend 2 hours Asbestos Awareness Training for Category 1 and 2 maintenance work and 16 hours O&M Training for Category 3 maintenance work.

The required number of personnel and the level of their training depend on the involvement of base personnel in asbestos related work. The APM must determine the extent of training based upon the potential for army personnel to be exposed to airborne asbestos.

A roster listing trained personnel and the kind of their training as well as copies of the training certificates should be maintained in the permanent files.

APPENDIX A

Asbestos Regulations

Asbestos Regulations

EUROPEAN UNION

- **EEC DIRECTIVE 477 AND 382**
- **EEC DIRECTIVE 217**

GERMANY

- **Asbestos-Guidelines** (Richtlinie für die Bewertung und Sanierung schwach gebundener Asbestprodukte in Gebäuden – Asbest-Richtlinie, January 1996)
- **TRGS**-(Technical Rules for Hazardous Substances) **519** Asbestos – Removal, Abatement or Maintenance Work, 1995
- **Regulation for Hazardous Substances** (Gefahrstoffverordnung vom 15. November 1999)
- **VBG** and **BGI**-Standard References of the Trade Association
 - VBG 100 – medical surveillance
 - Rules for the use of respirators
 - Rules for the use of protective clothing

FEDERAL U.S. LAW

- **40 CFR 763** – Asbestos Hazard Emergency Response Act (AHERA; 1999 Edition)
- **Public Law 101-637** - Asbestos School Hazard Abatement Reauthorization Act (ASHARA) November 28, 1990
- **40 CFR 61 Subpart M** – National Emission Standards for Hazardous Air Pollutants (NESHAP, 1990 Revision)
- **29 CFR 1910 and 1926** - Implementation of the Occupational Safety and Health Act

DOD REGULATIONS

- **AR 200-1** – Environmental Protection and Enhancement, Paragraph 8
- **AR 420-70** – Facilities Engineering, Buildings and Structures, Paragraph 3
- **AR 11-34** - Army Respiratory Protection Program

APPENDIX B

Survey Results

APPENDIX C

Notification Letter

NOTIFICATION LETTER

Date: _____

All Building Occupants:

Installation: _____

Building Number: _____

Apartment: _____

Subject: Asbestos Notification

Dear _____:

The purpose of this letter is to inform you that asbestos-containing materials (ACM) are present in the building you occupy.

The presence of asbestos-containing materials has been confirmed by a survey of the building by certified inspectors. The survey included sampling and analysis of suspected asbestos-containing materials, or assumption that material is ACM based on experience and professional judgement.

The identified asbestos-containing materials and their locations are described in the following. The materials are classified as friable or non-friable. Friable materials can be pulverized by hand pressure.

_____ No friable asbestos-containing materials have been identified in this building

_____ Friable asbestos-containing materials are located in the following areas:
ACM description:
Location of ACM:

_____ Non-friable asbestos-containing materials are located in the following areas:
ACM description:
Location of ACM:

The survey results are available for review at the office of the Asbestos Program Manager, located in the Environmental Office, Building 346.

The mere presence of asbestos-containing materials does not necessarily present a health hazard. Health hazards may exist when asbestos-containing materials are disturbed or damaged and fibers are released into air. Only trained workers with the proper equipment will perform work at the previously mentioned materials.

The following measures are indicated to avoid fiber release of asbestos-containing materials:

If you have any questions pertaining to this asbestos notification or require additional information, you may contact the Asbestos Program Manager.

Sincerely,

Name: _____

Title: _____

APPENDIX D

Job Request Form /

Work Authorization Form

JOB REQUEST FORM FOR MAINTENANCE WORK

1. Name _____ Date _____
 Telephone No. _____ Job Request No. _____

2. Starting Date _____ Anticipated Completion Date _____

3. Exact location of area involved (including building number, room number, location within room etc.):

4. Description of work involved:

5. Description of any asbestos-containing material that might be affected, if known (include location and type):

6. Name and telephone No. of requestor (maintenance personnel supervisor, contractor):

7. Submit this application to (Name of AMCO) :

MAINTENANCE WORK AUTHORIZATION FORM

1. Name _____ Date _____
Telephone No. _____ Job Request No. _____

2. **Authorization**

_____ Authorization is **not** given

Comments:

_____ Authorization is given to proceed the following maintenance work:

3. Description of any present asbestos-containing material that might be affected, (include location and type):

4. O & M procedures:

5. Personal Protection Equipment:

Signed: _____ Date _____
(Asbestos Program Manager)

Submit form to: _____

APPENDIX E

O &M Work Procedures

- 1. Thermal System Insulation (TSI):**
 - 1.1 Furnace access insulation (millboard)**
 - 1.2 Furnace lining**

- 2. Miscellaneous ACM (MISC):**
 - 2.1 Vinyl asbestos floor tiles /Mastic underneath floor tiles**
 - 2.2 Asbestos-Containing Mastic**
 - 2.3 Flange gaskets**
 - 2.4 Furnace door gaskets**
 - 2.5 Fire doors**
 - 2.6 Asbestos-cement roofing material**
 - 2.7 Asbestos-cement panels**
 - 2.8 Asbestos-cement pipes**

O &M Work Procedures

1. Thermal System Insulation:

1.1 FURNACE ACCESS INSULATION (MILLBOARD)

Location:

Benjamin Franklin Village:

- Furnace access insulation was found in the heating rooms of the following buildings:
 - 193, 195 – 199,
 - 283 – 285, 288, 289, 294,
 - 300, 301, 306 – 308,
 - 636 – 639, 641, 643 644 - 650, 652, 654, 655, 657 - 659, 661, 662, 668, 669, 671, 673, 675, 681, 682, 684, 685, 686, 687, 689, 690, 692, 694, 695, and
 - 701.

Cleaning:

- Do not clean millboard insulation. The metal plates above the insulation should not be removed. Training requirement: 2-hrs awareness training; PPE: none.

Repair:

- Do not repair millboard insulation. Remove and replace with asbestos-free material.

Removal:

- Any removal of the asbestos-containing millboard insulation has to be performed by a professional abatement contractor according to TRGS 519. Only contractors that are approved by German authorities according to § 39 Regulation for Hazardous Substances (Gefahrstoffverordnung) are allowed to perform this removal or maintenance work.

Labeling:

- Labeling required if millboard insulation is partly exposed and room is accessible.

Restricted activities:

- Do not disturb or damage the millboard insulation.
- Do not use an ordinary vacuum for cleanup of asbestos fibers/dust; do not dry sweep any area that is covered with asbestos dust

1.2 FURNACE LINING

Location:

Benjamin Franklin Village:

- Furnace lining was found in every heating room equipped with old furnaces.

Cleaning:

- Not required.

Repair:

- Damaged areas of the steel frame of the furnaces should be repaired. Training requirements: 16-hrs. O&M training; PPE: half-face respirator with HEPA filter, disposable overall.

Removal:

- Any removal of the furnace lining has to be performed by a professional abatement contractor according to TRGS 519. Only contractors that are approved by German authorities according to § 39 Regulation for Hazardous Substances (Gefahrstoffverordnung) are allowed to perform this removal or maintenance work.

Labeling:

- Labeling not required. The furnace lining is covered by the steel frame of the furnaces.

Restricted activities:

- Do not disturb or damage the steel frame of the furnaces.

2. Miscellaneous ACM

2.1 VINYL ASBESTOS FLOOR TILES / MASTIC UNDERNEATH FLOOR TILES

Location:

Benjamin Franklin Village:

- Asbestos-containing floor tiles with asbestos-containing mastic were found in playrooms of the following buildings:
 - 191, 192,
 - 308, 310,
 - 654, 656 – 659, 661 – 662, 666 – 668, 670, 671, 673, 675 – 685, 687, 690, 693 – 695, and
 - 703
- Asbestos-containing floor tiles with non-asbestos-containing mastic were found in playrooms of the following buildings:
 - 306, 307, and 691.
- Non-asbestos-containing floor tiles with asbestos-containing mastic were found in playrooms of buildings:
 - 688 and 701.

Cleaning:

- Floor tiles may be cleaned with regular floor cleaner. Do not use corrosive cleaners or abrasive cleaning techniques.

Repair:

- Single damaged floor tiles can be replaced by non-asbestos containing floor tiles by in-house maintenance personnel if this is possible without breaking the tiles. Training requirements: 16-hrs. O&M training; PPE: half-face respirator with HEPA filter, disposable overall.
- Single missing floor tiles in playrooms with asbestos-containing mastic should be replaced without disturbing the mastic. Therefore, the new floor tiles should be glued on the existing mastic. Do not abrade or remove the existing mastic. Training requirements: 16-hrs. O&M training; PPE: half-face respirator with HEPA filter, disposable overall.
- More extended damage needs to be repaired by professional abatement contractor according to TRGS 519.

Removal:

- Any removal of asbestos-containing floor tiles, asbestos-containing mastic or non-asbestos-containing floor tiles with asbestos-containing mastic has to be performed by a professional abatement contractor according to TRGS 519. The removal of asbestos-containing floor tiles without asbestos-containing mastic should follow the approved BIA procedure, BGI 664, BT 11.
- Asbestos-containing mastic has to be removed by milling of the floor pavement. Only contractors that are approved by German authorities according to § 39 Regulation for Hazardous Substances (Gefahrstoffverordnung) are allowed to perform a removal of asbestos-containing mastic.

Labeling:

- Not required.

Restricted activities:

- Do not disturb, damage, break or abrade asbestos-containing floor tiles or asbestos-containing mastic.

2.2 ASBESTOS-CONTAINING MASTIC

Location:

Benjamin Franklin Village:

- Asbestos-containing mastic not covered by any flooring was found in the playrooms of buildings 672.

Cleaning:

- The floor covered with mastic may only be cleaned from dust using wet cleaning methods or by using a vacuum cleaner with a HEPA filter and subsequent wet wiping of the floor. Debris and used cleaning materials (paper towels) need to be disposed of as asbestos containing waste. Training requirement: 16-hrs O&M training; PPE: half-face respirator with HEPA filter, disposable overall.

Repair:

- Do not repair asbestos-containing mastic. The mastic has to be covered by an air-tight flooring (vinyl roll flooring) or removed by milling by a professional abatement contractor according to TRGS 519.

Removal:

- Any removal of asbestos-containing mastic has to be performed by a professional abatement contractor according to TRGS 519. Only contractors that are approved by German authorities according to § 39 Regulation for Hazardous Substances (Gefahrstoffverordnung) are allowed to perform a removal of asbestos-containing mastic.

Labeling:

- As long as the mastic has not been removed or covered, the room should be labeled with warning signs, in both English and German.

Restricted activities:

- Do not disturb, damage, or abrade asbestos-containing mastic.
- Do not use an ordinary vacuum for cleanup of asbestos fibers/dust; do not dry sweep any area that is covered with asbestos dust.

2.3 FLANGE GASKETS

Location:

Benjamin Franklin Village:

- Asbestos-containing flange gaskets were found in nearly every heating room.

Cleaning:

- Not required.
- Do not wire brush pipe flanges.

Repair:

- Do not repair gaskets. Damaged gaskets should be replaced with non-asbestos-containing gaskets by approved contractors according to TRGS 519.
- During repair or exchange of pipe segments, valves, gauges, etc. affecting single gaskets: do not disturb, damage or abrade the gaskets. Training requirement: 16-hrs O&M training; PPE: half-face respirator with HEPA filter, disposable overall.

Removal:

- Any removal of asbestos-containing flange gaskets has to be performed by a professional abatement contractor according to TRGS 519. The removal should follow the approved BIA procedure, BGI 664, AT 1.

Labeling:

- Not required.

Restricted activities:

- Do not break or otherwise deteriorate gaskets.

2.4 FURNACE DOOR GASKETS

Location:

Benjamin Franklin Village:

- Asbestos-containing furnace door gaskets were found in every heating room equipped with old furnaces.

Cleaning:

- Do not clean furnace door gaskets.

Repair:

- Do not repair furnace door gaskets. Remove gaskets while removing the old furnaces.

Removal:

- Prior to a removal of the old furnaces, the asbestos-containing furnace door gaskets has to be removed by a professional abatement contractor according to TRGS 519. Only abatement contractors who are approved according to § 39 Regulation for Hazardous Substances (Gefahrstoffverordnung) are allowed to perform a removal of rope gaskets.

Labeling:

- Labeling required depending on accessibility. Locked furnace doors and furnace doors out of use do not need to be labeled.

Restricted activities:

- Do not disturb gasket ropes.
- Do not open furnace doors that are not longer used .
- Do not use an ordinary vacuum for cleanup of asbestos fibers/dust; do not dry sweep any area that is covered with asbestos dust.

2.5 FIRE DOORS

Location:

Benjamin Franklin Village:

- Fire doors presumed to contain asbestos were identified in every heating room.

Cleaning:

- Cleaning of intact fire doors do not deteriorate the enclosed asbestos. Training requirement: none; PPE: none.

Repair:

- Damaged fire doors should be removed and replaced by non-asbestos-containing fire doors and disposed of as ACM. Do not disassemble fire doors.
- Repair/exchange of door locks need to be done with care to not disturb the asbestos material. Training requirement: 2-hrs awareness training; PPE: none required.

Removal:

- The removal work has to be performed by trained personnel according to TRGS 519. Asbestos-containing fire doors have to be transported to a waste site approved by German authorities by a certified carrier.

Labeling:

- Not required.

Restricted activities:

- Do not cut, drill holes in or disassemble fire doors.

2.6 ASBESTOS-CEMENT ROOFING MATERIAL

Location:

Benjamin Franklin Village:

- A cement roof presumed to contain asbestos was identified on building 698 (chapel).

Cleaning:

- Asbestos-containing roofing material must not be cleaned by sand blasting, steam jetting or other techniques that might result in fiber release.
- Asbestos debris found beneath asbestos-cement roofs has to be removed using wet cleaning methods or by using a vacuum cleaner with a HEPA filter and subsequent wet wiping of the floor. Debris and used cleaning materials (paper towels) need to be disposed of as asbestos containing waste. Training requirement: 16-hrs O&M training; PPE: half-face respirator with HEPA filter, disposable overall.

Repair:

- Asbestos-cement panels becoming friable by weathering need to be replaced or coated by an approved contractor according to TRGS 519.
- Partial roof repairs should be documented (mapping) to prevent asbestos-free material from being removed as ACM or asbestos-containing material being falsely regarded as asbestos-free since samples were taken from repair patches only.

Removal:

- Any removal work has to be performed by a professional abatement contractor according to TRGS 519.

Labeling:

- Not required.

Restricted activities:

- Do not cut, saw, abrade, break or drill holes in cemented asbestos products.
- Do not use an ordinary vacuum for cleanup of asbestos fibers/dust; do not dry sweep any area that is covered with asbestos dust.

2.7 ASBESTOS-CEMENT PANELS

Location:

Benjamin Franklin Village:

- Asbestos-cement panels were identified in the following substations:
 - Bldg. 188, 276, 635, and 721.

Cleaning:

- Asbestos-containing cement panels must not be cleaned by abrading methods, sand blasting, steam jetting or other techniques that might result in fiber release.
- Asbestos debris found beneath asbestos-cement panels has to be removed using wet cleaning methods or by using a vacuum cleaner with a HEPA filter and subsequent wet wiping of the floor. Debris and used cleaning materials (paper towels) need to be disposed of as asbestos containing waste. Training requirement: 16-hrs O&M training; PPE: half-face respirator with HEPA filter, disposable overall.

Repair:

- Asbestos-cement panels becoming friable need to be replaced or coated by an approved contractor according to TRGS 519.

Removal:

- Any removal work has to be performed by a professional abatement contractor according to TRGS 519.

Labeling:

- Not required.

Restricted activities:

- Do not cut, saw, abrade, break or drill holes in cemented asbestos products.
- Do not use an ordinary vacuum for cleanup of asbestos fibers/dust; do not dry sweep any area that is covered with asbestos dust.

2.8 ASBESTOS-CEMENT PIPES

Location:

Benjamin Franklin Village:

- Asbestos-cement pipes were identified in the following substations:
 - Bldg. 188, 635, and 721.

Cleaning:

- Asbestos-containing cement pipes must not be cleaned by abrading methods, sand blasting, steam jetting or other techniques that might result in fiber release.
- Asbestos debris found beneath asbestos-cement pipes has to be removed using wet cleaning methods or by using a vacuum cleaner with a HEPA filter and subsequent wet wiping of the floor. Debris and used cleaning materials (paper towels) need to be disposed of as asbestos containing waste. Training requirement: 16-hrs O&M training; PPE: half-face respirator with HEPA filter, disposable overall.

Repair:

- Asbestos-cement pipes becoming friable need to be replaced by an approved contractor according to TRGS 519. The replacement should follow the approved BIA procedure, BGI 664, BT 2, BT 3, or BT 4.

Removal:

- Any removal work has to be performed by a professional abatement contractor according to TRGS 519.

Labeling:

- Not required.

Restricted activities:

- Do not cut, saw, abrade, break or drill holes in cemented asbestos products.
- Do not use an ordinary vacuum for cleanup of asbestos fibers/dust; do not dry sweep any area that is covered with asbestos dust

APPENDIX F

Respirator Protection Plan

Respirator Protection Plan

1. SPECIFICATION OF RESPIRATOR

During all sampling activities and O & M procedures disturbing ACM, personnel have to wear air-purifying respirators as follows:

- Air purifying respirator (half face) fitted with P-100 cartridge / filter or P2 / P3-filters if European brand.

2. USER INSTRUCTIONS

Respirator cartridges / filters should be changed at least daily or when breathing difficulty is encountered due to particulate loading or as per manufacturer instructions. All workers must pass a respirator fit-check prior to starting work.

3. MEDICAL CHECK

Personnel has to receive the regular activity-specific medical check and respirator-fit-test by an authorized physician required by the applicable occupational safety and health administration (OSHA for U.S. employees, HVBG for German employees).

4. INSPECTION OF RESPIRATORS

- ***Respirator exhalation valve***

Pull off plastic cover and check valve for debris or for tears in the valve, which could cause leakage.

- ***Respirator inhalation valve (one for each filter cartridge)***

Unscrew cartridges and visually inspect valves for tears. Ensure that the inhalation valves and cartridge receptacle gaskets are in place.

- Ensure a protective cover lens is attached, if a full-faced respirator is used.
- Ensure you have the proper cartridge (HEPA or P2/P3)

- Ensure the face piece harness is not damaged. The serrated portion of the harness can fragment, which will prevent proper face seal adjustment.
- Don the respirator and perform negative and positive pressure fit check.

5. NEGATIVE AND POSITIVE FIT CHECK PROCEDURES

The respirator must be subjected to the following tightness check before each use:

For the negative fit check, cover the inhalation port on the filter cartridges with the palm of the hands, blocking the intake air. Gently inhale and the face piece should collapse against the face.

For the positive fit check, cover the exhalation valve with the palm of your hand and blow gently into the face piece. A slight positive pressure should build up inside the respirator and no air should be felt escaping from around the face-piece seal.

If any leakage is detected around the facial seal, re-adjust the head harness straps and repeat the fit check until there is no leakage. If other facial leakage is detected, the condition must be investigated and corrected before another fit check is made. The respirator must pass the tightness test before the respirator is used. The respirator will not furnish protection unless all inhaled air is drawn through suitable cartridges or filters.

Note: For employees that are subject to OSHA regulations, qualitative or quantitative fit testing must be performed prior to respirator use and every six months thereafter, or when changed conditions require testing. Furthermore, the employer has to establish a respiratory protection program according to 29 CFR 1910.134.

APPENDIX G

Information for US Employees and US Contractors: Health Hazard through Asbestos

HEALTH HAZARDS ASSOCIATED WITH ASBESTOS EXPOSURE

Information for US Employees and US Contractors

The US organization OSHA (Occupational Safety and Health Administration) is responsible for worker protection and requires all local nationals and US civilians and contractors performing cleaning, construction or renovation work to attend by a 2 hour awareness training dealing with asbestos dangers in the work place.

General: In Germany, the manufacture, processing, or sale of asbestos is prohibited. Only demolition, abatement, and maintenance work are permitted. This work must be performed by certified personnel according to TRGS 519. Unprofessional handling of Asbestos-Containing Materials (ACM) can create a high fiber release and endanger employees and others.

Asbestos Investigations: An asbestos survey was conducted at Benjamin Franklin Village in 1990 and a re-inspection in 2002. Asbestos-containing materials were found in most of the heating rooms in the basements and in the playrooms (floor tiles and mastic).

What is asbestos? Asbestos is a naturally occurring fibrous silicate mineral that has been mined for its useful properties. It is non-combustible, is chemically and thermally stable, and has a high tensile strength.

Where was asbestos used: The main uses of asbestos were in:

- Thermal Insulation materials
- Vinyl floor tiles / vinyl sheet flooring
- Plaster
- Ceiling tiles
- Spray-applied insulation
- Fireproofing materials
- paper products
- Asbestos-cement products
- Textiles
- Packings and gaskets
- Brakes
- Caulking/putties
- Fire doors

Health Hazards: The mere presence of asbestos-containing materials does not necessarily present a health hazard. Health hazards may exist when asbestos-containing materials are disturbed or damaged and fibers are released into air. The inhalation of asbestos fibers can cause serious diseases of the lungs and other organs. These health diseases include:

Asbestosis: A scarring of the lung tissue caused by inhaling asbestos fibers/dust. The scarring may become so severe that the lungs cannot function. The latency period is often 25 - 40 years.

Mesothelioma: Cancer of the pleura (the outer lining of the lung chest cavity) and/or the peritoneum (the lining of the abdominal wall). The latency period for mesothelioma is often 15 - 30 years.

Lung cancer: Lung cancer can be caused by asbestos. The effects of lung cancer are often greatly increased by cigarette smoking (by about 50 %). The latency period for cancer is often 15 - 30 years.

Recognition of asbestos-free products: Asbestos can only be identified under a microscope. Therefore, products cannot be distinguished definitely as asbestos-free or as ACM products without microscopic examination.

General protective measures: Non-friable ACM in good condition should not be disturbed or damaged. In the event that ACM becomes friable and poses a health hazard, a qualified person (Environmental Office) must be informed. Maintenance or removal work on ACM has to be performed by certified personnel according to TRGS 519.

All employees / contractors are to be instructed verbally on this information to ensure measures contained herein have been understood. This must be confirmed in writing.

Location / Date

Company / Department

Employee

GESUNDHEITSGEFAHREN DURCH ASBEST

Information für US Angestellte and US Vertragsfirmen

Gemäß der für Arbeitsschutz zuständigen US Organisation OSHA (Occupational Safety and Health Administration), müssen alle US Angestellten und US Vertragsfirmen, die Reinigungs-, Wartungs- oder Renovierungsarbeiten in Gebäuden durchführen, an einer 2-stündigen Unterweisung über die Gefahren durch Asbest am Arbeitsplatz teilnehmen.

Allgemeines: In Deutschland ist die Herstellung, Verwendung und Inverkehrbringung von Asbest bzw. asbesthaltigen Produkten verboten. Der Umgang mit asbesthaltigen Stoffen ist nur im Rahmen von Abbruch-, Sanierungs- oder Instandhaltungsarbeiten erlaubt. Unprofessioneller Umgang mit asbesthaltigen Produkten kann zur Freisetzung von Asbestfasern führen und Beschäftigte sowie unbeteiligte Dritte gefährden.

Asbestuntersuchungen: 1990 wurde eine Asbestuntersuchung in Benjamin Franklin Village durchgeführt. Eine Neuberwertung der asbesthaltigen Materialien erfolgte 2002. Asbesthaltige Materialien wurden in den meisten Heizungsräumen in den Kellergeschossen sowie in den Spielzimmern (Bodenfliesen, Kleber) festgestellt.

Was ist Asbest: Asbest ist ein natürlich vorkommendes, faseriges Silikat, das aufgrund seiner nützlichen Eigenschaften wie z.B. Nichtbrennbarkeit, chemische und thermische Resistenz sowie hohe Zug-/Reißfestigkeit abgebaut wurde.

Verwendung von Asbest: Asbest wurde vor allem in den folgenden Produkten verwendet:

- Thermische Isolierungen
- Bodenbeläge
- Putz
- Akustik Platten
- Spritzasbest
- Feuerschutz
- Papierprodukte
- Asbestzement Produkte
- Textilien
- Dichtungen
- Bremsen
- Fensterdichtungen
- Feuerschutztüren

Gesundheitsgefahren: Von festgebundenen Asbestprodukten in gutem Zustand geht in eingebauten (Ruhe-) Zustand keine Gesundheitsgefahr aus. Werden asbesthaltige Produkte mechanisch bearbeitet oder beschädigt, können Asbestfasern freigesetzt werden. Das Einatmen von Asbestfasern kann zu ernsthaften Gesundheitsschäden der Lungen und anderer Organe führen. Folgende Erkrankungen sind u.a. möglich:

Asbestose: Eine Vernarbung des Lungengewebes verursacht durch eingeatmete Asbestfasern. Die Vernarbung kann so schwerwiegend werden, dass die Lungen versagen. Die Latenzzeit beträgt zwischen 25 - 40 Jahren.

Pleura - Mesotheliom: Rippenfell- oder Bauchfellkrebs. Die Latenzzeit beträgt zwischen 15 - 30 Jahren.

Lungenkrebs: Lungenkrebs kann durch Asbestfasern verursacht werden. Das Risiko von Lungenkrebs wird deutlich durch Rauchen erhöht (über 50 %). Die Latenzzeit beträgt zwischen 15 - 30 Jahren.

Erkennen von asbestfreien Produkten: Asbest kann nur mittels Mikroskop nachgewiesen werden. Dementsprechend können Materialien nicht ohne mikroskopische Untersuchung definitiv als asbestfrei oder asbesthaltig eingestuft werden.

Allgemeine Schutzmaßnahmen: Asbesthaltige Materialien in gutem Zustand sollten nicht beschädigt oder mechanisch bearbeitet werden. Im Fall einer Faserfreisetzung durch asbesthaltige Produkte sollte sofort eine verantwortliche qualifizierte Person (Environmental Office) benachrichtigt werden. Jegliche Instandhaltungs-, Sanierungs- und Beseitigungsarbeiten an asbesthaltigen Produkten dürfen nur von zugelassenen Fachfirmen gemäß TRGS 519 durchgeführt werden.

Alle Angestellten und Vertragsfirmen müssen verbal über den Inhalt dieser Mitteilung informiert werden um sicherzustellen, dass alles verstanden wurde. Die Anweisung muß schriftlich bestätigt werden.

Ort / Datum

Firma / Abteilung

Angestellter